Keio University

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Keio University

Graduate School of Medicine

2019

Blazing a Path for the Future of Medicine
Bringing Together and
Educating World-Class Minds

Message from the Dean

Hideyuki Okano, MD, PhD
Dean, Graduate School of Medicine

The value of a university lies in its ability to produce new ideas, and through scholarship create things that are of value to society. The top-level researchers in the Keio University Graduate School of Medicine pursue advanced research across a wide range of fields including the biological sciences, basic medical science, clinical medicine, and social medicine. Research conducted with an enthusiasm for science has not only scientific value, but it can lead to remarkable advances in drug discovery; and when conducted with clinical specimens it can provide the seeds for new scientific discoveries, breakthroughs in thinking, and improved methods for the diagnosis, treatment, and prevention of disease. Advancing the biological understanding of humans through clinical studies and other research is the fundamental characteristic of the Graduate School of Medicine. In parallel, the importance of social medicine is also on the rise, as public policy is increasingly informed by the analysis of big data from fields such as molecular epidemiology and public health.

Dr. Shibasaburo Kitasato, the first dean of Keio University School of Medicine, sought to achieve a greater coordination between basic and clinical sciences that would unite the school as one family. The close connection between basic science and clinical medicine is a major reason why Keio remains one of Japan's most prominent institutions of learning. The Graduate School of Medicine continuously promotes cooperative research between the life sciences, basic medical science, clinical medicine, and social medicine in order to educate students who can actively contribute to the world. Furthermore, it continues to invest in new research facilities and equipment while increasing the number of courses conducted in English, fostering an interdisciplinary education and research system, pursuing links with renowned domestic and overseas research institutions, and forging research ties between academia and industry. The number of students who publish their degree theses in respected international journals is increasing, and many students pursue international study abroad opportunities. We hope these students will go on to tackle some of the world's most challenging medical problems.

Keio is leading the vanguard of the future of medicine, and we hope more motivated individuals will consider joining us to take on this challenge together.

CONTENTS

HISTORY OF KEIO MEDICINE

In 1917, world-renowned microbiologist Dr. Shibasaburo Kitasato was appointed as the first dean of the School of Medicine. The young Kitasato had dedicated his career to making medicine more accessible to the public, founding his own institute of medicine with the help of Keio founder Yukichi Fukuzawa.
Established in 1956, the Graduate School of Medicine has continued to vigorously pursue its ideal of educating medical scientists and clinical researchers who will help define future international standards in an environment that unites basic science and clinical medicine.

Yukichi Fukuzawa
Keio University Founder
1835 - 1901

Yukichi Fukuzawa
Keio University Founder
1835 - 1901

From Bench to Bedside
Medical Researchers With a Bright Future

Special Messages

At Keio University Graduate School of Medicine, students are conducting internationally recognized exceptional research, and many students have received awards for their work. Students from all over the world are also joining the ranks at Keio and are contributing to successes in medical research.

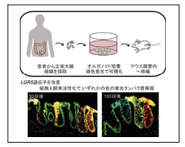
Message 01

Shinya Sugimoto

(2017 Graduate)

PhD Degree Thesis:
Thesis Title: Sugimoto S, Ohta Y, Fujii M, Matano M, Shimokawa M, Nanki K, Date S, Nishikori S, Nakazato Y, Nakamura T, Kanai T, Sato T. Reconstruction of the Human Colon Epithelium In Vivo. Cell Stem Cell 2018; 22: 171-176.e5

After Graduation: **Project Instructor**
Gastroenterology, Keio University Graduate School of Medicine



I have been carrying out research on the theme of transplanting intestinal epithelial stem cells, called organoids, into the intestinal tract. Research on genetically modified mice has revealed that regeneration of intestinal epithelium is regulated by stem cells expressing a marker called LGR5, but human studies have so far not been possible due to a lack of experimental models. For my thesis, I succeeded in developing a technique for implanting human colon organoids produced in vitro into the intestines of immunocompromised mice, and engrafting them as human colon epithelium, which are different in size and have a different type of mucus organization than mice. In addition, using CRISPR-Cas9 to engineer an LGR5-CreER knockin allele demonstrated self-renewal and multipotency of human LGR5-positive cells in the mouse body. In the future, I would like to analyze the contribution of certain genetic mutations to tumorigenesis and would like to advance preclinical studies to apply organoids with potential as transplant cells in regenerative medicine.

Message to Prospective Students
The Keio University Hospital afforded me wonderful professors in an environment where I could engage in cutting-edge basic research and experience the best clinical medicine offered today. I realize that my perspective on clinical practice has changed significantly since attending graduate school, having gained knowledge in multiple fields through collaborations with experts from various backgrounds. While there were times when I was discouraged by failure (and my own shortcomings), the experience of thinking things through and overcoming hardships together with others is what makes graduate school so rewarding. I hope you students will make the most of this once-in-a-lifetime opportunity.

Message 02

Makoto Nishino

(2017 Graduate)

Dissertation Title:
Dissertation Title: Variant CD44 expression is enriching for a cell population with cancer stem cell-like characteristics in human lung adenocarcinoma

After Graduation: **Keiyu Hospital**

Cancers exhibit properties of proliferation, invasion, and metastasis, which we experience in clinical practice when previously effective anticancer drugs are rendered unresponsive or when cancer recurrences occur following surgery and radiation therapy. But we now have the hypothesis of cancer stem cells to explain these characteristics, which was proposed by Dr. John E. Dick, recipient of the 22nd Keio Medical Science Prize. Although the molecules necessary for the identification of cancer stem cells differ by carcinoma, I have used the Variant CD44 antigen and ALDH enzymes to reveal the possibility that lung adenocarcinoma cells with these two markers contain the properties of cancer stem cells. While there has been constant progress in cancer immunotherapy drugs, such as immunity checkpoint inhibitors, it is still difficult to achieve complete cure and remission—not only in patients with advanced lung cancer, but in other advanced cancers as well. I anticipate that this cancer stem cell hypothesis will cause a further paradigm shift in current cancer diagnoses.

Message to Prospective Students
I trust that many of my readers want to ease patient suffering through clinical practice, by unraveling the mechanism of disease and laying the foundation for the further development of new treatments. Experts in life science, basic medicine, clinical medicine, and social medicine all gather here at Shinanomachi, which is the perfect environment to make those new treatments a reality. I hope that students make the most of their time here, and through working with many inspiring mentors and colleagues, they become bigger, better versions of themselves.

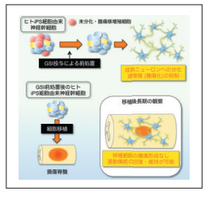
Message 03

Kazuki Okubo

(2017 Graduate)

PhD Degree Thesis:
Pretreatment with γ-Secretase Inhibitor Prevents Tumor-like Overgrowth in Human iPSC-Derived Transplant for Spinal Cord Injury. Stem Cell Reports. (Vol. 7, 1-15, 2016)

After Graduation: **nstructor, Department of Orthopedic Surgery, Keio University School of Medicine**



Although transplantation of neural stem/progenitor cells (NSPCs) for brain and spinal cord injuries have been proven to be effective, the biggest challenge we currently face is how to prevent post-transplant malignancies in those cells. As a graduate student, I focused on the fact that Notch signaling has a profound impact on cell multipotency and self-renewal capacity. We were able to inhibit tumorigenesis by transplanting iPS cell-derived tumor-forming NSPCs into mice with spinal cord injuries and pretreating them with a drug that inhibits Notch signaling (Gamma secretase inhibitor) prior to transplantation. Our experiment also revealed that the reconstruction of the spinal neuronal circuit from the transplanted cells led to the recovery and maintenance of motor function.

Our findings are expected to be used as a new countermeasure against tumor formation upon clinical application of human-induced iPS cell-derived NSPCs transplantation.

Message to Prospective Students
My spinal regeneration laboratory worked on joint research with the orthopedic surgical labs and physiology labs. The constant interaction not only within but between our labs and active joint research in both basic and clinical studies led to much more creative research. I am now a clinician, but the four years I spent in graduate school were very meaningful to me. I am grateful for being able to immerse myself in basic research every day and seeing how that research leads to clinical application. I am sure you, too, will have similar experiences as you conduct your own research at the Keio University Graduate School of Medicine.

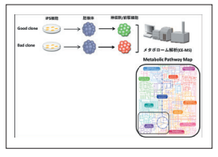
Message 03

Katsuyuki Nakanishi

(2017 Graduate)

PhD Degree Thesis:
Metabolome Analysis of iPS Cell-Derived Neural Stem Cells for Regenerative Treatment of Spinal Cord Injuries

After Graduation: **Doctoral Program, Keio University Graduate School of Medicine**



There are high expectations for spinal cord injury regeneration treatments using human iPS cell-derived neural stem cells. Measures against tumorigenesis of transplanted cells are extremely important as we head toward realization of spinal cord injury regeneration treatments. Until now, we have conducted analysis focusing on gene expression and DNA methylation to elucidate the safety evaluation of cell lines and the mechanism of tumorigenesis. However, tumors are known to have characteristic metabolisms that exhibit unusual glycolytic behavior. However, none of the properties related to the metabolism of neural stem cells used for transplantation had yet to be elucidated. So we performed metabolome analysis using a capillary electrophoresis mass spectrometer (CE-MS) in order to clarify whether the glycolytic system is elevated in the cell line reported to have tumorigenicity. Going forward, I hope to further clarify the metabolism of tumorigenic cell lines and to use it for efficient removal of tumorigenic cells and quality control of transplanted cells by combining this analysis with other metabolic analyses.

Message to Prospective Students
The master's programs are very exciting, with students gathered from across Japan and around the world. I was able to expand my knowledge by listening to lectures on state-of-the-art medical research from a diverse group of teachers. The school also regularly invites researchers who are at the forefront in their field to visit and give lectures. The opportunity to learn about cutting-edge research up close is one of the things that make studying here so exciting. Another valuable experience is the Clinical Experience Program, which gives students opportunities for hands-on observation of clinical practice.

Graduate School of Medicine

Admission Capacity

Master's Program (2-year) : 20 Students

http://www.med.keio.ac.jp/en/admissions/wasters/

PhD Program (4-year) : 80 Students

http://www.med.keio.ac.jp/en/admissions/doctoral/

Admission Policy

The Graduate School welcomes the following students who possess abundant knowledge and research ability without regard to nationality:

Highly motivated students who desire to become world-class researchers in medicine and medical science

- Students who can comfortably read, comprehend, and critique English journal articles in the life sciences and medical fields
- Students who possess abundant basic knowledge of the medical and life sciences

Curriculum Policy

● Master's Program

The Master's Program is open to applicants with a background outside of medicine, and aims to train high-quality specialists and researchers in a variety of fields related to medicine. During the first year, students take lectures in basic medicine and conduct research in preparation for their master's thesis. The curriculum is designed to imbue the student with the ability to acquire a deep understanding of the fields of medical science and medical care most relevant to their chosen occupation goals; both in their current state and future outlook.

● PhD Program (Medical Science Specialty)

The curriculum is designed in accordance with the principles of practical learning. Accordingly, all required courses are taught in English in order to equip students for careers in the international arena. Students can attend seminars that are hosted regularly by the Keio Medical Society, which consist of lectures, presentations, and discussions held in English with leading researchers from Japan and abroad. PhD students develop internationally-minded, practical research skills. Students can also conduct research for their degree at leading partner institutes in Japan.

● PhD Program (Applied Medicine Specialty)

This specialty comprises two unique sub-specialties in clinical oncology and clinical research. In each, students participate in lectures, write reports, and gain practical research experience in a wide range of domains.

Diploma Policy

● Master's Program

In the Master's Program, the student must submit a master's degree thesis and undergo a review. In the fall of the second year, a presentation assembly is held in order for students to present their research progress and receive advice and instruction from experts other than their supervisor.

● PhD Program

In the PhD Program, a progress audit is held in the third year; and after submitting a doctoral thesis (in English) of which the candidate is the first author (published article or a collection comprising multiple theses), a final assessment is held that is open to all Keio-affiliated personnel. Students who demonstrate exceptional research achievements can apply for their degree during their third year.

Curriculum and Eligibility

● Master's Program (2-year) [Admission Capacity: 20 Students]
Training Researchers and Specialists for Success in a Variety of Fields Related to Medicine

The Graduate School of Medicine Master's Program strongly emphasizes:

1) -Acquiring the basic knowledge and abilities necessary for growth and success in the student's chosen medicine-related field as a specialist or researcher.
2) -Adequately equipping the student to have a nuanced understanding of the current state of his or her medicine-related field as well as its future outlook.
3) -Being intimately familiar with all aspects of illness including ramifications on patients, families, and medical caregivers.

The program is designed for students of the natural sciences or humanities/social sciences. It seeks to imbue students with deep knowledge of medicine gained through direct study and research in Keio's hospital and research labs in order to become successful professionals or to continue on to the PhD Program.

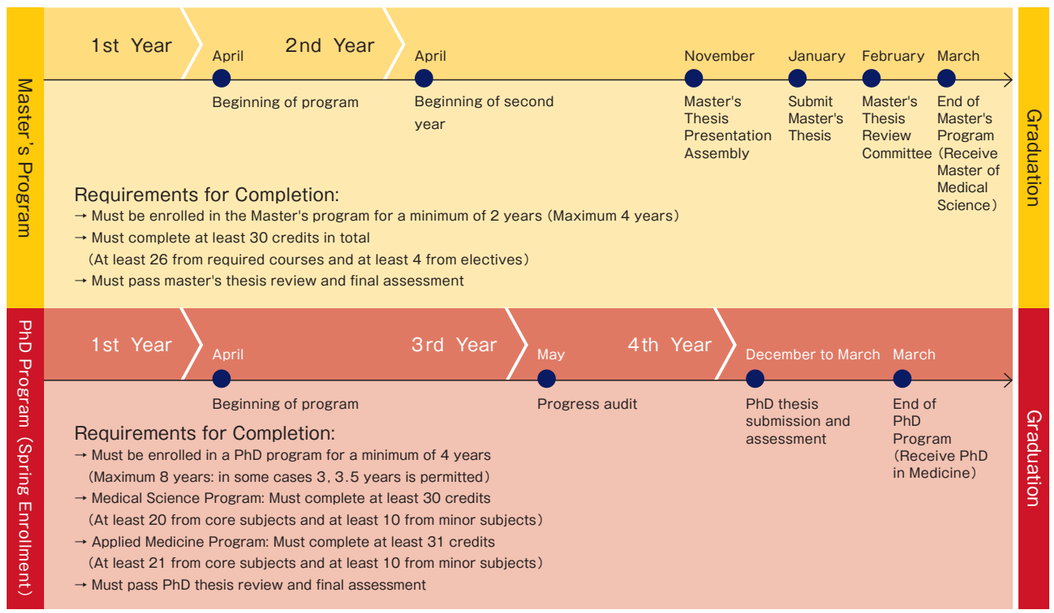
● PhD Program (4-year) [Admission Capacity: 80 Students]
Training Creative, Independent Researchers in a Wide Range of Fields

This program is designed for graduates of a 6-year medical, dentistry, veterinary, or pharmacy school; as well as graduates of a master's degree program. The goal of the Medical Science Specialty is to train students to conduct creative research in the fields of basic medical science and clinical medicine, as well as research into the mechanisms of diseases and the development of new therapeutic approaches. The Applied Medicine Specialty is designed mainly for practicing physicians and other medical professionals. Its aim is to guide students in using their clinical knowledge and analytical skills to plan and conduct comprehensive clinical trials and interdisciplinary research especially in the fields of oncology and cardiology.
The program seeks to advance cooperative research with outside research institutions and organizations; and seeks to encourage high-quality, fruitful research through the uninhibited interaction between doctoral students and other researchers at Keio, as well as with researchers from industry. Students can also experience first hand the process of acquiring patents and creating intellectual property in this collaborative environment.

Research Facilities

To conduct excellent and fruitful medical research, it is essential to have full access to a complete range of research equipment and facilities, in addition to ample ingenuity and motivation. In the Keio University Graduate School of Medicine, students and researchers can make full use of a range of collaborative research facilities such as the Shinanomachi Media Center (Kitasato Memorial Medical Library), RI Center, Laboratory Animal Center, and Collaborative Research Resources. A rich collection of books and over 11,000 medical e-journals (the largest collection in Japan) are available in the Kitasato Memorial Medical Library. A range of animals from mice to those of larger sizes are bred and raised in the Laboratory Animal Center. Over 100 pieces of analysis equipment necessary for all manners of life sciences research including omics, imaging, and disease modeling are available in the Collaborative Research Resources. Equipment such as micro-array analysis devices, next-generation sequencers, cell sorters, laser confocal microscopes, super-resolution microscopes, micro-CTs for small animals, mass spectrometers, histological analysis devices and other advanced equipment are fully available to students in our Master's and PhD Programs.

Degree Granting Process



Cancer Professional Development Program

The Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has organized the Human Resource Development Plan for Cancer from 2007 to 2011, and the Promotion Plan for the Platform of Human Resource Development for Cancer from 2012 to 2016. Under the support of these programs, Keio has offered various courses in order to develop high-quality cancer care specialists. From 2017, Keio will offer the following programs in order to develop leaders in cancer care who can advance cutting-edge cancer team treatment anywhere in the world. In 2017, we have started new Cancer Professional training plan with government support for training various cancer professionals who can take care of cancer patients with medically and socially different backgrounds.

Outline of the Cancer Professional Curriculum in the Graduate School of Medicine

● Master's Program

Cancer Rehabilitation Therapist / Researcher Course

This Master's Program course focuses on those who have attained a professional qualification in physical therapy, occupational therapy, or speech-language-hearing therapy. In addition to required courses, students study rehabilitation medicine and cancer rehabilitation. Students are also trained as rehabilitation specialists focusing on prevention and treatment methods for various functional disorders that arise in cancer patients. Students acquire practical clinical and research abilities, thereby enabling them to participate in interdisciplinary cancer teams and lead the future of cancer rehabilitation.

Cancer Professional (Master's) Program Outline (Ex.)

1st Year	Spring Semester	In addition to required courses, additional credits are taken in Cancer Professional (PhD) Program courses
	Autumn Semester	Choose and begin research under the supervision of the student's supervising professor Clinical training in Keio University Hospital
2nd Year	Whole Year	Clinical training and research in Keio University Hospital Training at an advanced cancer treatment partner institution (if desired)

● PhD Program (Applied Medicine Specialty)

[Clinical Oncology Track] Refining students clinical expertise and knowledge through training in planning optimal treatment strategies for cancer patients as a leader of an oncology team

Medical clinal oncology specialist course / Surgical oncology specialist course / Radiation oncology specialist course / Palliative care specialist course / Rehabilitation specialist course / Medical physicist course

[Clinical Research Track] Advancing translational research from basic research to clinical applications

Cancer translational research course

While designing and conducting clinical research under the guidance of their supervising professor, students also take courses in a range of topics from cancer diagnosis to treatment, as well as in fundamental topics in cancer medicine. In addition, students rotate in multiple hospital departments (including chemotherapy, molecular targeted therapy, radiation oncology, minimally-invasive surgery, palliative care, and rehabilitation medicine) and experience actual treatment practices and procedures in order to acquire interdisciplinary treatment knowledge. After four years, students are prepared to become high-level specialists who are capable of leading cutting-edge advancements in cancer care.

Cancer Professional (PhD) Program Outline (Ex.)

1st Year	Choose and begin research under the supervision of the student's supervising professor Take courses in basic cancer biology and a range of clinical cancer medicine
2nd Year	Clinical department rotations (Plan and carry out rotations in departments of your choosing for 11 months) By rotating through various departments, students are able to experience actual treatment procedures in areas such as chemotherapy, molecular targeted therapy, radiation therapy, minimally-invasive surgery, palliative care, and rehabilitation
3rd Year	Clinical training and research in Keio University Hospital Training at an advanced cancer treatment partner institution (if desired)
4th Year	Apply for PhD degree

Clinical Research Professional Program

The Applied Medicine specialty course trains students to become professionals in designing and conducting clinical and epidemiological research focused on humans. Generally this program is suitable for those with the following research interests:

1. **Clinical studies and epidemiological research in the field of clinical medicine**
2. **Medical technology research in all fields of medicine**
3. **Epidemiological research in the field of preventive medicine**

To conduct high-quality clinical research, nursing staff and pharmacists, not only the physician, are crucial. Furthermore, a research coordinator, data manager, biostatistician, and others from a range of fields are all essential. Accordingly, this program is open to talented individuals from various fields, not only trained physicians. This program requires a certain level of experience and clinical expertise, so please consult with your desired supervising professor before the application period opens. Students can enter either the Medical Science or the Applied Medicine speciality, conduct research as outlined above, and attain the degree of PhD in Medicine. Please discuss this with your desired supervising professor.

Shinanomachi Campus: A Global Medical Hub

Opening its Doors to the World

In the PhD Program, courses are conducted in English providing a truly international and practical learning environment that does not draw a distinction between Japanese students and international students. PhD students are also strongly encouraged to study abroad and participate in overseas academic conferences in order to gain the skills necessary to succeed in the international arena.

In seminars hosted regularly by the Keio Medical Society and various departments, students can learn from leading researchers from Japan and abroad about the latest advances in medical research. At Keio, such international connections are considered essential for research.

In 2014 Keio University was selected to join the Japanese government's Top Global University Project as one of Japan's top universities providing a world-class level of research and education. Under this program, Keio is integrating its efforts through three transdisciplinary research and education initiatives focusing on longevity, security, and creativity in order to confront the numerous challenges facing modern society. Through collaboration in research and education as well as exchanges of faculty centered around these three conceptual clusters, Keio seeks to deepen ties with other leading universities across the world while advancing truly cutting-edge, interdisciplinary research. The Graduate School of Medicine is taking a leading role in the longevity cluster, and has welcomed Guest Professors (Global) from strategic partner universities around the world to teach seminars and serve as advisors for graduate students.

Since the 1996, the Keio University Medical Science Fund has awarded The Keio Medical Science Prize yearly to recognize the outstanding and creative achievements of researchers in the fields of medicine and life sciences, in particular those contributing to scientific developments in medicine. The fund also provides grants to support the international research activities of young researchers, as well as to assist graduate students in attending academic conferences abroad.

Recent recipients of the Keio Medical Science Prize are:
2016: Svante Pääbo, Max Planck Institute for Evolutionary Anthropology
2016: Tasuku Honjo, Graduate School of Medicine and Faculty of Medicine Kyoto University
2017: John E.Dick, Department of Molecular Genetics, University of Tronto
2017: Seiji Ozawa, Kansei Fukushi Research Center, Tohoku Fukushi University

Strengthening International Ties

In 2012, the Graduate School of Medicine PhD Program established a joint summer school program with Peking University and Karolinska Institutet, with King's College London joining in 2014. Every year, students take courses and participate in lab work at one of the participating universities and can earn transferable credits. There are plans to develop this program into a double degree program in the future.

The host schools and themes are:
2012: Keio University / Cell Biology and Metabolism
2013: Karolinska Institutet / Infection, Inflammation, and Immunology
2014: Peking University / Cancer
2015: King's College London / Cardiovascular
2016: Keio University / Stem Cell Research and Regenerative Medicine
2017: Karolinska Institutet / Brain Aging
2018: Peking University / Chronic Inflammation

Since 2008, Keio has partnered with the University of Texas MD Anderson Cancer Center and St. Luke's International Hospital in Tokyo to establish a joint educational platform called the Academy of Cancer Experts (ACE). The ACE's seminars and workshops are held in English and are taught by MD Anderson faculty members. The ACE's overarching goal is to train cancer research specialists who are equipped to take on the challenges that cancer poses to Japanese society, and it is steadily attracting Applied Medicine PhD students who are intent on leading the next generation of cancer research and treatment.

Faculty

http://faculty.med.keio.ac.jp/en/research/faculty/

List of PhD and Master's Program professors

Professor Yoshiaki Kubota

Affiliation: Anatomy

Specialized Area: Understanding the Formation of Vascular Networks

Research Content: Unlocking the mysteries of the dynamics of how the blood vessel network is able to reach remote locations of the body using the latest imaging techniques. On this foundation, developing completely new molecular targeted treatments for cancer and ischemia, etc.

Professor Kazunori Nakajima

Affiliation: Anatomy

Specialized Area: Mechanisms of cerebral cortical development

Research Content: We are interested in the cellular and molecular mechanisms of how the cells in the central nervous system, in particular the cells in the cerebral cortex, are born, migrate to their final destinations, develop unique structures such as layers, and finally form such a complex network to enable the various higher brain functions. We are also investigating how these developmental processes are disturbed by various perturbations.

Professor Hideyuki Okano

Affiliation: Physiology

Specialized Area: CNS development and regeneration

Research Content: Elucidating the clinical states of neurological disorders, and research into regenerative medicine of the CNS using neural stem cells and iPS cell technology. Development of genetically modified primate techniques, creation of new models of neurological and mental disorders, and the elucidation of the mechanisms of brain development and higher level brain function.

Professor Michisuke Yuzaki

Affiliation: Physiology

Specialized Area: Synapse formation and plasticity as the basis of higher brain functions and neuropsychiatric disorders

Research Content: Synapses are not only formed during development, but also continuously modified according to neuronal activities throughout adulthood. Synaptic plasticity is believed to be the basis of all higher brain functions, including learning and memory. Moreover, recent genetic studies have revealed that many neuropsychiatric disorders are caused by defects in genes encoding synaptic molecules. Thus, we aim to understand mechanisms by which synapses are formed, maintained and eliminated by neuronal activities using electrophysiological, molecular biological, and behavioral approaches.

Professor Masato Yasui

Affiliation: Pharmacology

Specialized Area: Water Biology and Medicine: understanding in vivo water dynamics and the roles of aquaporins

Research Content: A double-sided analysis of the structure-function relationship of aquaporins (water channels) consisting of a biochemical approach and molecular dynamic simulations. Furthermore, researching aquaporin regulation mechanisms and high-order functions, and building a basis for drug development.

Visiting Professor Makoto Suematsu

Affiliation: Biochemistry

Specialized Area: Biochemistry of diseases, Gas biology

Research Content: Investigating molecular mechanisms for genetic regulation of metabolism and metabolic regulation of genetics using advanced mass spectrometry

Professor Haruhiko Siomi

Affiliation: Molecular Biology

Specialized Area: RNA biology

Research Content: Understanding molecular mechanisms underlying genomic quality control in light of stem cell formation and maintenance through characterizations of molecular pathways leading to transposon silencing including RNAi. In addition, understanding diseases caused by defects in RNAi and its related pathways.

Professor Toru Takebayashi

Affiliation: Preventive Medicine and Public Health

Specialized Area: Preventive medicine; environmental and occupational medicine

Research Content: To achieve primary prevention for all in every community, my main research topic is tailor-made preventive medicine based on epidemiology with population-based cohort studies, combining multi-omics technologies, metabolomics in particular. Furthermore, pursuing social prevention efforts through establishing environmental and occupational standards for protecting population and workers' health through a scientific risk assessment process.

Professor Tomonori Okamura

Affiliation: Preventive Medicine and Public Health

Specialized Area: Public health; lifestyle-related disease; epidemiology; nutrition; community medicine; international collaborative research

Research Content: We are seeking to identify new biomarkers that predict incidence of lifestyle-related diseases, and also developing novel lifestyle modification (diet, etc.) that will prevent various diseases through large-scale cohort studies and international collaborative studies. Also we are performing regional intervention research through health training and community education, health policy making studies (Health Japan 21, Data Health), and establishing clinical guidelines based on epidemiologic evidence.

Professor Naoki Hasegawa

Affiliation: Center for Infectious Disease and Infection Control

Specialized Area: Clinical Infectious Diseases. Respiratory Infections. Infection Control

Research Content: Searching for disease mechanisims or biomarkers to evaluate disease activity of respiratory infectious diseases sucjh as penumococcal pneumonia, pseudomonas aeruginosa pneunonia, influenza, mycobacterial infectious diseases including non-tuberculous mycobacterium and HIV infection. Evaluating the PK–PD evaluation of pulmonary antimicrobial drugs in the lungs by obtaining respiratory tract fluids using bronchoscope. Promotiom of PK/PD based appropriate usage of newly-develpoed antibiotics. Developing, evaluating, and examining the clinical importance of ART in HIV management.

Professor Michiie Sakamoto

Affiliation: Pathology

Specialized Area: Tumor pathology, Liver pathology, Molecular pathology, Pathology informatics

Research Content: Analyze molecular mechanisms of human cancer development and progression. Establish precisional pathologic diagnosis, quantitative pathologic diagnosis and information technology based pathology.

Professor Yae Kanai

Affiliation: Pathology

Specialized Area: Pathology; Cancer epigenetics; Integrative disease omics analysis

Research Content: To participate in genome medicine and preventive/pre-emptive medicine by understanding the molecular mechanisms of diseases, therapeutic and diagnostic targets are explored based on integrative disease omics analysis, especially epigenome analysis, in human cancers derived from various organs, histopathologically-recognized precancerous lesions and cancer-prone metabolic and/or inflammatory disorders.

Professor Akihiko Yoshimura

Affiliation: Microbiology and Immunology

Specialized Area: Molecular immunology; understanding disease centered around cytokines and infllammation

Research Content: 1. Analysis of immune regulation mechanims by CIS/SOCS family genes and cytokines.
2. Analysis of cytokines and their signl transduction in various inflammatory diseases.
3. Functional analysis of Spred/Sprouty protein family.
4. T-cell reprogramming.

Professor Kenya Honda

Affiliation: Microbiology and Immunology

Specialized Area: Immunology; microbiology; intestinal microbiota

Research Content: Clarifying effects of the intestinal microbiota on the host physiology. Also investigating the mechanisms of host response to pathogens.

Visiting professor Shigeo Koyasu

Affiliation: Microbiology and Immunology

Specialized Area: Immunology; cell biology

Research Content: Analyzing the regulation mechanisms of natural and acquired immunity using molecular cell biological techniques and mouse models. Recently focusing on innate lymphoid cells.

Professor Masaki Q. Fujita

Affiliation: Legal Medicine

Specialized Area: Forensic pathology; sudden death study

Research Content: Investigating the pathogenesis and predisposition of sudden unexpected death syndrome in young Asian males by performing genetic and comparative epidemiological studies. Establishing objective diagnosis methods in forensic medicine.

Professor Hiroaki Miyata

Affiliation: Health Policy and Management

Specialized Area: Health policy and management; Quality of healthcare; Epidemiology; Evaluation; Social science method

Research Content: Health policy research and clinical research for i. Quality improvement initiative, ii. Healthcare technology/diagnosis/treatment innovation , iii. Sustainable, optimal healthcare system.

Professor Minoru Ko

Affiliation: The Sakaguchi Laboratory - Department of Systems Medicine

Specialized Area: Stem cells; early embryos; systems medicine; genomics, informatics

Research Content: Elucidating the structure and dynamics of gene regulatory networks; studying tissue regeneration and rejuvenation; promoting the extension of healthspan through the application of systematic and computational approaches to medicine.

Professor Koji Shimoda

Affiliation: Laboratory Animal Center

Specialized Area: Laboratory animal science; welfare of laboratory animals; developmental engineering of mice

Research Content: Consideration of the welfare of animals used in experiments, while inspecting, evaluating, and verifying the implementation of appropriate animal experimentation. Using transgenic techniques to produce various types of model mice for biomedical research.

Professor Yutaka Kawakami

Affiliation: Division of Cellular Signaling, Institute for Advanced Medical Research

Specialized Area: Investigation of immune- associated diseases (cancer, auto-immune disorders, etc.) and their modulation

Research Content: Investigation of immune-associated diseases such as cancer and auto-immune disorders, and developing gene therapies and immunotherapies; Investigation of tumor immuno-microenvironment and developing molecular targeted therapies.

Professor Hideyuki Saya

Affiliation: Institute for Advanced Medical Research

Specialized Area: Molecular mechanisms of malignant tumor formation

Research Content: 1) Developing new treatment strategies and property analysis of cancer stem cells;
2) Molecular analysis of the mechanisms of invasion, metastasis, and reoccurrence of cancer;
3) Analysis of the heterogeneous properties of cancer tissue structure and the plasticity of cancer cells.

Professor Keiichi Fukuda

Affiliation: Cardiology

Specialized Area: Development of treatment methods for intractable heart failure through the regeneration of cardiac muscle cells

Research Content: Cardiomyocyte regeneration using iPS stem cells to understand disease pathology, develop new treatments, and advance research in regenerative medicine. Developing multi-faceted research into the correlation of heart failure and sympathetic nerve function, the mechanisms of heart valve disease, and new treatment methods of pulmonary hypertension.

(As of May 1,2017) Refer to entrance examination instructions for an updated list of supervising professors.

Faculty

http://faculty.med.keio.ac.jp/en/research/faculty/

Professor Tomoko Betsuyaku

Affiliation Pulmonary Medicine

Specialized Area Basic and clinical research concerning understanding and developing new treatments for respiratory illnesses

Research Content Molecular biological research concerning the pathology and pathogenesis mechanisms of lung cancer and inflammatory lung diseases such as chronic obstructive pulmonary disease (COPD), interstitial pneumonia, and bronchial asthma; establishing new diagnostic methods and treatments, and searching for markers which reflect a patient's condition.

Professor Jin Nakahara

Affiliation Neurology

Specialized Area Neurological therapeutics

Research Content We aim to develop actual therapeutics by every conceivable means – from advancement of translational research to home care medicine – to improve the quality of life of patients suffering from various neurological diseases.

Professor Tsutomu Takeuchi

Affiliation Rheumatology

Specialized Area The molecular mechanisms and regulation of autoimmune disorders, and the development of targeted treatments

Research Content Molecular analysis of the pathogenesis of autoimmune diseases (rheumatoid arthrtis, systemic lupus erythematosus, etc.) and translational research towards the development of molecular targeting clinical applications.

Professor Yuko Kitagawa

Affiliation General and Gastroenterological Surgery

Specialized Area Gasteroenterology; surgical oncology; endoscopic surgery; multidisciplinary solid tumor therapy; surgical infections; bodily reactions to invasive surgery; sentinel node navigation surgery

Research Content Research utilizing an approach based on the sentinel node theory. Analyzing the mechanisms of metastasis of lymph node cancers and their regulation. Applying microscopic metastasis and capillary blood cancer cell detection methods to realize individualized, multidisciplinary treatment mehthods for digestive organ cancers. Research into reactions to invasive surgery, and surgery-related infections.

Professor Hideyuki Shimizu

Affiliation Cardiovascular Surgery

Specialized Area Cardiovascular surgery; Endovascular stent-graft; minimally invasive cardiac surgery; organ protection methods; artificial heart and blood vessels

Research Content Developing surgical methods with a basis in implementing major surgery and minimally invasive treatments for cardiac and aortic diseases; and research on perioperative organ protection methods. Development of new treatments and diagnostic methods for aortic aneurysm and aortic dissection.

Professor Kazunari Yoshida

Affiliation Neurosurgery

Specialized Area Surgical treatments for brain tumors; multidisciplinary treatments for malignant brain tumors; basicranial surgery; histological analysis of brain tumors

Research Content Developing surgical techniques based on surgical anatomy and analysis of clinical imaging of cranial diseases and brain tumors. Developing multidisciplinary therapies and diagnostics for malignant brain tumors (particularly germ cell tumors). Analysis of brain tumor malignancy using biological and histochemical techniques.

Professor Takanori Kanai

Affiliation Gastroenterology and Hepatology

Specialized Area Basic and clinical research of gastrointestinal immunity disorders

Research Content Clinical development of new drugs and treatments for IBD as well as liver and pancreatic immunity disorders. Developing preventive medicine that seeks to unify immunology, genetics, and nutritional science.

Professor Shinichiro Okamoto

Affiliation Hematology

Specialized Area Basic and clinical studies on the pathogenesis of hematological malignancies and innovative therapeutic approaches with allogeneic stem cell transplantataion and molecular targeting agents.

Research Content Targeting therapies for hematological malignancies with molecular targeted therapies; selective regulation of allo-immune reaction and potential use of this allo-reactivity for the eradication of MRD; Mechanisms of anti-tumor effects of the alloimmune response to umbilical cord blood transplant; QOL after treatment for hematological malignancies; new molecular targeted treatments and clinical research on MDS and myeloma, and basic research on the pathogenesis of hematological malignancies.

Professor Hiroshi Itoh

Affiliation Nephrology, Endocrinology and Metabolism

Specialized Area Translational research on lifestyle-related diseases, metabolic syndrome and renal/vascular complications

Research Content Clarifying the endocrine and metabolic molecular mechanisms of metabolic syndrome associated with high blood pressure, diabetes, obesity, etc., and renal/vascular complications; translational research towards developing new treatments and applications from the perspectives of prevention, anti-aging medicine, and regenerative medicine.

Professor Tatsuo Kuroda

Affiliation Pediatric Surgery

Specialized Area Cellular kinetics of pediatric cancer; pediatric cancer stem cells, fetal surgery

Research Content Basic research on cellular kinetics and cancer stem cells of pediatric cancers associated with clinical trials of new treatment strategies. Develoment of fetal diagnostic and surgical techniques.

Professor Hisao Asamura

Affiliation General Thoracic Surgery

Specialized Area General thoracic surgery; thoracic oncology; TNM stage classification of cancer (UICC); cancer registry and database development; minimally invasive thoracic surgery

Research Content Multidisciplinary therapy of lung cancer, thymic epithelial tumor, pleural mesothelioma, and other thoracic malignancies; clinical trials including surgery for thoracic malignancies; TNM stage classification (UICC); development of minimally-invasive surgical techniques for lung cancers; lung cancer registry.

Professor Morio Matsumoto

Affiliation Orthopedic Surgery

Specialized Area Spine Surgery, Minimally Invasive Spine Therapies, Scoliosis

Research Content Developing prosthetics necessary for spinal surgery. Identifying scoliosis susceptible genes and developing new assesment and surgical methods. Multicenter collaborative research on spine disorders. Researching spine aging through MRI machines. Researching the invasiveness of spine surgery.

Professor Masaya Nakamura

Affiliation Orthopedic Surgery

Specialized Area Spine and Spinal Cord Surgery, Spinal Cord Disorder Therapies, Neuroscience (Spinal Cord Regeneration, Growth factors, Neuroimaging)

Research Content Multicenter collaborative research on spine and spinal cord disorders. Developing regenerative medicine for musculoskeletal disorders, especially for spinal cord injury and new assessment methods through MRI and CT. Working on (1) iPS cell-based transplant therapies, (2) hepatocyte growth factors, (3) suppression of axonal growth inhibitors.

Professor Kazuo Kishi

Affiliation Plastic and Reconstructive Surgery

Specialized Area Skin Regeneration (Including Skin Appendages)

Research Content Developing skin reproduction methods that utilize adult animal cells based on the phenomenon of skin regeneration in fetal mice, and analyzing its cellular and molecular mechanisms.

Professor Tomonobu Hasegawa

Affiliation Pediatrics

Specialized Area Molecular Mechanisms of Human Growth and Sexual Differentiation

Research Content Analyzing the molecular mechanisms of human growth and sex differentiation (and disorders thereof) using human diseases and mouse models, while also developing new treatments for disorders of growth and sex development.

Professor Daisuke Aoki

Affiliation Gynecology

Specialized Area Gynecologic Oncology, Gynecologic Pathology, Molecular Cytogenetics, Hereditary Cancer, Fertility-Preserving Therapy in Gynecological Cancer, Cancer Screening

Research Content Pursuing new prevention and therapeutic methods based on analysis of cancer genomes and molecular cytogenesis; and also investigating diagnostic performance of profiles of biomarkers in cancer cells.

Professor Kazuo Tsubota

Affiliation Ophthalmology

Specialized Area Regenerative Medicine, Corneal Transplantation, Dry Eye, Refractive Surgery, Myopia, Presbyopia, Anti-Aging Medicine, Health Science, Food Science, Innovation

Research Content Our department focuses on cornea regeneration, developing new treatments for and elucidating the mechanisms of dry eye associated with visual display terminals (VDT) and Sjogren's syndrome. Recently, we are pursuing anti-aging medicine for the treatment and prevention of age-related macular degeneration, cataracts, presbyopia, myopia and glaucoma. We have expanded our outlook towards the health and food sciences while also studying ophthalmic optics and quality of life as well as researching the mechanisms and prevention of myopia. New endeavors focus on university-initiated industry, innovation and professional development.

Professor Mototsugu Oya

Affiliation Urology

Specialized Area Understanding the Oncogenesis of Urological Cancers and Developing Novel Cancer Therapies

Research Content Aiming for an integrative understanding of the development of cancer from precancerous lesions and the mechanisms of metastasis; developing innovative new treatments with a focus on the cellular-biological features in cytokine production and neoangiogenesis, etc.

Professor Meigen Liu

Affiliation Rehabilitation Medicine

Specialized Area Rehabilitation Medicine, Neuroscience, Exercise Physiology

Research Content 1) Developing rehabilitation methods to induce plasticity of the central nervous system; 2) Development and clinical applications of brain machine interface; 3) Evaluation and prognosis prediction of injury; 4) Research concerning the exercise stress of disabled persons; 5) Advancing the research of cancer rehabilitaiton.

Professor Takao Takahashi

Affiliation Pediatrics

Specialized Area Developmental Neurobiology, the Cell Cycle, Neural Stem Cells, Neocortical Histogenesis

Research Content Research concerning mechanisms of developmental disorders of higher cortical function with a focus on proliferation/differentiation behavior of neural stem cells/progenitors in normal and abnormal histogenesis of the neocortex.

Professor Hiroyuki Yamagishi

Affiliation Pediatrics

Specialized Area Pediatric Cardiology, Clinical Cardiac Development

Research Content Congenital heart disease (CHD) occurs in nearly 1 % of all live births and is the major cause of infant mortality and morbidity. Our research for identifying genetic causes and molecular mechanisms of CHD is essential not only to fully understand the disease, but also to enhance current knowledge about new preventive and/or therapeutic strategies.

Professor Mamoru Tanaka

Affiliation Obstetrics

Specialized Area Perinatal Medicine, Reproductive Medicine, Clinical Genetics, Embryology

Research Content Molecular biology concerning mammalian development; fetal medicine ranging from diagnostics to therapies; research and development of treatments of perinatal diseases utilizing mesenchyme stem cells.

Professor Masayuki Amagai

Affiliation Dermatology

Specialized Area Autoimmunity, Allergies, Skin Barrier, Skin Immunity

Research Content Elucidating pathophysiological and immunological mechanisms in tissue-specific autoimmune disorders, and clarifying fundamental mechanisms of peripheral tolerance by analyzing the skin as an immune organ. Clarifying the mechanisms of allergy diseases at the molecular level from the point of view of skin barrier dysfunction, and developing novel therapeutic and preventive strategies. Elucidating the pathophysiological mechanisms of severe forms of drug eruption.

Professor Kaoru Ogawa

Affiliation Otorhinolaryngology, Head and Neck Surgery

Specialized Area Protection and Repair of Inner Ear Sensory Cells, The Central Suppression Mechanisms of Tinnitus

Research Content Pursuing new treatments for chronic sensorineural hearing loss and tinnitus which are refractory in nature; 1) Regeneration of inner ear sensory cells (for hearing and balance); and 2) Research concerning cellular protective mechanisms against various kinds of damage such as acoustic trauma.

(As of May 1,2017) Refer to entrance examination instructions for an updated list of supervising professors.

Faculty

http://faculty.med.keio.ac.jp/en/research/faculty/

Professor Masaru Mimura

Affiliation Neuropsychiatry

Specialized Area Neuropsychology and Geriatric Psychiatry

Research Content Elucidating and developing treatments and rehabilitation techniques targeted at higher-level brain function disorders and cognitive impairments caused by brain damage. Analyzing cognitive impairments of psychoneural disorders related to depression using functional neuroimaging.

Professor Naoyuki Shigematsu

Affiliation Radiotherapy

Specialized Area Radiation Oncology, Radiation Therapy, Radiation Biology

Research Content Radiation oncology; radiation biology
In clinical research, performing adaptive magnification of stereotactic radiation therapy, intensity modulated radiotherapy, image-guided radiotherapy, as well as radiation within tissue and cavities in various types of cancer treatments. Also evaluating the effectiveness of chemotherapy combined with radiation therapy.
In basic research, examining chromosome and genetic mutation as a result of radiation exposure; and molecular biological investigation to predict the efficacy of radiation therapy.

Professor Taneaki Nakagawa

Affiliation Dentistry and Oral Surgery

Specialized Area Periodontology

Research Content 1）Research on periodonotopathic bacteria;
2）Resarch on oral tissue regeneration using mesenchymal stem cells and iPS cells;
3）Analysis of the sensitivity of antimicrobial agents against periodontopathic bacteria;
4）Clinical research on sonic toothbrush cleaning.

Professor Yusuke Tanigawara

Affiliation Pharmacokinetics and Pharmacodynamics

Specialized Area Pharmacokinetics, Clinical Pharmacology

Research Content Researching drug disposition, pharmacodynamics, pharmacogenomics and pharmacometrics. The research includes elucidating the individual differences in drug response and development of optimal dosing methodology and drug response biomarkers, aiming towards precision medicine.

Professor Jun Kudoh

Affiliation Collaborative Research Resources（Laboratory of Gene Medicine）

Specialized Area Medical genomics; Gene medicine

Research Content Developing genomic analytical methods in order to examine and explain the genetic/hereditary causes of monogenic and multifactorial disorders; as well as their pathogenic mechanisms at the molecular level.

Professor Michito Hirakata

Affiliation Center for Medical Education

Specialized Area Medical pedagogy; Rheumatology; Clinical Immunology

Research Content Medical pedagogy: 1）Reform of the admission system, 2）Development of "Medical Professionalism", 3）Introduction of simulation, 4）Implementation of competency-based education, and 5）Establishment of continuous basic- and postgraduate- educational programs, to improve the Quality of Medical Education.
Rheumatology: Investigating the production mechanism, clinical significance, and disease state mechanism of "autoantibodies", which are characteristic features of autoimmune disorders such as rheumatic diseases and connective tissue diseases.

Professor Masahiro Jinzaki

Affiliation Radiology

Specialized Area Diagnostic Radiology

Research Content 1.Constructing optimum image diagnostic algorithms in the field of cardiology and urology.
2.Aiming for further human-body visualization by developing new devices or techniques（microcirculatory system, lymphatic system, and peripheral nervous system）.
3.Assessing clinical application of four-dimensional dynamic imaging.

Professor Hiroshi Morisaki

Affiliation Anesthesiology

Specialized Area Sepsis and Myocardial Function; Gastrointestinal Defense Mechanisms; Volatile Anesthetics and Microcirculatory Disorders; Epidural Anesthesia and Immune System

Research Content Clarifying the underlying mechanisms of host defense system against invasive stress. We are currently engaged in both basic and clinical research regarding protective approaches for myocardial dysfunction during sepsis and gut barrier function in the critically ill, and modulation of the immune system by epidural and/or inhalational anesthesia.

Professor Mitsuru Murata

Affiliation Laboratory Medicine

Specialized Area Genetic Testing, Clinical Lab Standardization, Understanding and Preventing Thrombotic Disorders, Basic Platelet Research

Research Content Researching, standardizing and spreading the use of clinical tests in medical practice using genome information and genetic analysis techniques. Elucidating the mechanisms of blood clot formation from a molecular perspective, and through identifying hereditary and acquired risk factors, establishing effective preventions and treatments. Basic research of blood platelet formation and establishing evaluation methods of platelet function.

Professor Junichi Sasaki

Affiliation Department of Emergency and critical care

Specialized Area Acute medicine, traumatology, burn care, surgical infections, infection prevention and control, biological reactions and pharmacokinetics under invasive stress

Research Content Analysis of biological reactions under invasive stress conditions using two-hit animal models（endotoxin administration after burn priming, etc.）and analysis of pharmacokinetics as it relates to antimicrobial and antifungal drugs in critically ill patients
Regenerative medicine in critical care（such as the application of cell technology for burn treatment）

Professor Koichi Matsuo

Affiliation Collaborative Research Resources（Laboratory of Cell and Tissue Biology）

Specialized Area Bone cell biology

Research Content Elucidating the development and homeostasis of the skeleton through cell-cell interaction.

Professor Hidekazu Suzuki

Affiliation Center for Medical Education

Specialized Area Medical Education; Gastroenterology and Hepatology; Medical Bioinformatics; Clinical and Molecular Oncology; Clinical Pharmacology and Nutrition; Primary Care Medicine

Research Content Course director of MD-PhD program; Professional medical education; Graduate medical education; Big clinical data-driven research; Clinical trial; Regulatory medicine; Diagnostic and therapeutic approach to organic and functional gastrointestinal diseases; Pathophysiology, diagnosis and treatment of Helicobacter pylori infection; Clinical pharmacology and nutrition.

Professor Haruhiko Ogata

Affiliation Center for Diagnostic and Therapeutic Endoscopy

Specialized Area Pathogenesis and development of treatment for inflammatory bowel disease, endoscopic diagnosis and treatment of gastrointestinal disease.

Research Content Understanding the pathogenesis of inflammatory bowel disease by image enhancing and in vivo observation of the gastrointestinal mucosa using endoscopic devices equipped with super-magnifying functionality and capsule endoscopes equipped with additional functionality that can achieve pan-enteric surveillance.

Professor Ryuji Tanosaki

Affiliation Center for Transfusion Medicine and Cell Therapy

Specialized Area Hematology-oncology and cell therapy, in particular hematopoietic stem cell transplantation and transfusion medicine

Research Content Transfusion medicine and cell therapy, in particular allogeneic hematopoietic stem cell transplantation for malignant lymphoma, including adult T-cell leukemia/lymphoma. Cell processing center management.

Professor Kenjiro Kosaki

Affiliation Center for Medical Genetics

Specialized Area Clinical Genetics, Teratology, Pediatrics

Research Content 1）Clinical genomics includling diagnosis and management of rare diaseases and genetic counseling. 2）Elucidation of genetic causes of genetic diseases with a focus on "undiagnosed diseases".

Professor Taiji Furuno

Affiliation Physics

Specialized Area Interfaces in Biophysical Chemistry, Bioimaging

Research Content Creating two-dimensional（2D）protein arrays using the air-water interface and immobilizing them after transfer onto a solid surface; and performing structural evaluations under physiological conditions using an atomic force microscope. Currently performing immobilization of an oriented dense 2D packing of Streptavidin, and research concerning the application toward protein microarrays（or protein chips）.

Professor Hiroyoshi Inoue

Affiliation Chemistry

Specialized Area Radiology, Pharmaceutical Chemistry, Natural Products

Research Content I am responsible for radiation health and safety at Keio University's Shinanomachi Campus. Our research is primarily interested in developing ways to safely concentrate and dispose of radioisotopes. In addition, we are interested in developing biosensors using isotopic marking and aptamer technology for age related disease diagnostics and food monitoring. Another aspect of our research focuses on the identification of useful functional components from nature and ways to develop these for synthetic applications.

Professor Hiroshi Nakamura

Affiliation Business

Specialized Area Industrial Organization（Life Science and Health Care Industries）, Strategic Management

Research Content Organizational reform and management strategies of companies in order to bring about innovation in the life science industries-Policies concerning the creation of innovative products while reducing economic/financial burden on patients and governments-Cooperation among different types of occupations and functions in healthcare

Professor Naohisa Yahagi

Affiliation Cancer Center（Advanced Minimally Invasive Therapy Unit）

Specialized Area Minimally Invasive treatment for Gastrointestinal Neoplasia

Research Content Developing new procedures for advanced minimally-invasive treatments such as endoscopic resection and laparoscopic resection. And developing new therapeutic instruments for advanced minimally-invasive treatments, including NOTES（natural orifice translumenal endoscopic surgery）and LECS（laparoscopy and endoscopy combined surgery）.

Professor Hideo Matsumoto

Affiliation Institute for Integrated Sports Medicine

Specialized Area Sports Medicine, Sports Science, Knee Surgery, Biomedical Engineering

Research Content Research aimed at improvement of sports performance and prevention of sports injuries and disorders, using 3D motion analysis in sports and activities of daily living. Research and development of artificial joints for sports recovery in athletes. Research of sports medicine including sports and health, sports nutrition, and sports psychology.

List of Master's Program professors

Professor Mayumi Kajimura

Affiliation Biology

Specialized Area Coupling of brain blood circulation and metabolism

Research Content The phenomenon of the connection between local nerve action and metabolism in cerebral blood flow is known as neurovascular coupling（NVC）. We seek to elucidate the actual molecular action of NVC which forms the basis of cerebral metabolic regulation through the evaluation of spatial-temporal uneven information of low-molecular metabolites（such as when, where, and how much）. <http://k-ris.keio.ac.jp/Profiles/74/0007369/profile.html>

Professor Masatoshi Nara

Affiliation Letters

Specialized Area Ethics, Medical Ethics

Research Content Applying ethical theories and methodologies to analyze ethical problems raised in clinical medicine and medical research. Recently focusing on ethical problems in reproductive medicine, misconduct in medical research, protection of personal information, and conflict of interest.

Professor Tomofumi Anegawa

Affiliation Business

Specialized Area Health Economics, Applied Economics

Research Content Applying economics to analyze medical care, education, energy, and other related industries. In particular, studying the economics of drugs, the medical device industry and intellectual property rights, and geographical variation in medical care. Furthermore, establishing a grand design for cross-disciplinary and multi-generational research and education as a key to realize healthy aging.

（As of May 1,2017）Refer to entrance examination instructions for an updated list of supervising professors.

Student Voices

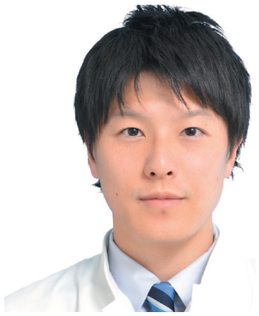
PhD Program

I left my hospital job and went back to graduate school. Unlike other graduate schools, I think the Keio Graduate School of Medicine stands out for its variety of classes. I was able to study not just within my major, but also in fields I had never learned about before, which broadened my perspective. Another valuable experience was the ability to gain the latest information on cutting edge research from my professors, who were all engaged internationally. In my master's program, there were classes almost every day, but the doctoral program focused less on classes and guaranteed more time for research, so I was able to strike a healthy balance between class work and research.

4th Year PhD Student

Nobuko Konishi

Department of Rehabilitation Medicine



PhD Program

While I belong to the Department of Surgery, I also conduct research in the Division of Gene Regulation at the Institute for Advanced Medical Research. I am engaged in tumor-related research mainly focusing on cancer stem cells. After completing my initial two years of training, I spent two years as a surgeon at a a partner health care center. During that time I felt that, as a clinician, I wanted to grasp the basic research mindset and set my sights on graduate school.

I had been involved in clinical practice since graduation, I was a complete novice when it came to basic research, but the professors and senior students in my lab were kind and patient in their instruction. This year I am planning to earn my doctorate degree and would like to make strides in both basic and clinical research as a scientist in future.

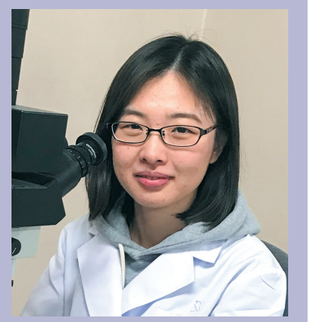
2nd Year PhD Student

Yuki Hirata

Division of General and Gastroenterological Surgery

International Student in the PhD Program

I am a third year PhD student from Pathology Department, Graduate School of Medicine. Currently I am working on epigenome and genome profile analysis of stomach cancer. My interests in cancer researches rooted in my internship experiences at Oncology Department in China. Many patients suffer from late diagnosis and lacking of treatment methods. There is thus an urgent need for understanding the mechanism underlying this severe disease. Therefore, I came to Keio for further study. I am glad I made this decision, being able to doing researches with all the supports, academically, financially and beyond from our school. Valuable advice receiving from my professor and mentors in our laboratory always guiding me through difficulties in studies. Variate funding and scholarships provided by Keio helped my research and life in Japan. And activities for international students to adjust our lives in new circumstance, enrich our life besides researches also an important part of my life in Keio. I am proud of being part of Keio and will do my best to contribute to it. Now I am pursuing to be a physician-scientist, to do both clinical works and basic researches, hopefully to practice some research results to benefit more clinical patients in the near future.



Ophthalmology

3nd Year PhD Student

Yang Menghan

Scholarships

A variety of schlolarships are available for students who wish to study at Keio University.

Please read the criteria carefully to check which ones you are eligible for.

Before Enrollment

Two major scholarships for students seeking admission to the Graduate School of Medicine are:

- MEXT (The Japanese Ministry of Education, Culture, Sports, Science and Technology) Scholarship
  Embassy recommendation / University recommendation
  Please visit: http://www.ic.keio.ac.jp/en/study/mext/index.html

- Keio Design the Future Award
  The Graduate School of Medicine will recommend one nominee to the Award Committee from among the students who passed the entrance examination. If the student passes the final selection by the Award Committee, they will receive reimbursement of all academic fees and a monthly stipend after entering Keio.
  Please visit: http://www.ic.keio.ac.jp/en/life/scholarship/dfaward.html

After Enrollment

There are three main categories according to sponsors and some schoarships are only for privately financed international students.
For scholarships now available for current students (privately financed international students),
Please visit: http://www.ic.keio.ac.jp/en/life/scholarship/available.html

Offered by Keio University

For all graduate students:

Name of Scholarship	Eligibility	Yearly Stipend	Application Period
Keio Graduate School Scholarship	Graduate students who have high motivation for academic achievement, an excellent academic record, good character, and financial difficulty in paying study-related expenses.	Maximum: JPY 600,000	April or May
Shinzo Koizumi Foundation Scholarship	Graduate students except for final year who have high motivation for academic achievement, an excellent academic record, good character, and financial difficulty in paying study-related expenses.	JPY 360,000	October or November

School-Specific Scholarships for Graduate School of Medicine students :

Name of Scholarship	Purpose	Eligibility	Yearly Stipend	Application Period
Master's Program Scholarship	To encourage master's students to pursue their education further in Keio's PhD programs.	2nd year Master's students who will continue to a PhD program in the following year.	Maximum: JPY 1,000,000	February
Keio Research Encouragement Scholarship	To develop future international research leaders in various fields.	Highly motivated 1st year Master's students showing great research promise.	JPY 300,000	April
Doctoral Program Scholarship	To encourage and support students in their PhD studies.	1st and 2nd year PhD students; also 3rd and 4th year doctoral students who exhibit excellence in research.	Maximum: JPY 1,000,000	July
Iichiro Ushioda Memorial Scholarship	To train high-quality researchers in the PhD programs.	PhD students with excellent character and academic performance.	Maximum: JPY 360,000	November
Fumon and Fusako Ohtsuka Special Memorial Scholarship	To develop future leaders of medicine in Japan.	PhD students with excellent character and academic performance.	Maximum: JPY 1,000,000	November

Offered by JASSO

JASSO is an independent administrative institution established under MEXT (The Japanese Ministry of Education, Culture, Sports, Science and Technology). JASSO provides a scholarship to self-supporting international students.

Name of Scholarship	Eligibility	Monthly Stipend	Application Period
Monbukagakusho Honors Scholarship	Privately Financed International Students	JPY 48,000	April

Offered by private foundations and local governments

For scholarship offered by private foundations and local governments, please visit the Internaional Center's website:
http://www.ic.keio.ac.jp/en/life/scholarship/

Degree Figures | Tuition and Fees

Master's Degrees Awarded [As of April 1, 2018, number of female graduates indicated in parentheses]

1994 - 2016 Total*	Master's Degree	341 (178)

*The Master's Program was established in 1994

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Degrees	18 (8)	23 (11)	28 (9)	19 (11)	17 (11)	16 (9)	15 (11)	24 (12)	13 (4)	6 (3)	17 (7)

PhD Degrees Awarded [As of April 1, 2018, () indicates number of women in the total]

1952 - 1991 Total	Doctor of Medical Science	2,257 (140)
1991 - 2016 Total	PhD in Medicine	2,658 (485)

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Degrees	87 (17)	108 (31)	103 (23)	101 (23)	83 (15)	131 (27)	101 (24)	111 (26)	117 (33)	119 (30)	113 (41)

Tuition and Fees (2018)

Master's	Registration Fee	Tuition Fee	Total First-Year Fees
	JPY 60,000	JPY 1,320,000	JPY 1,382,600

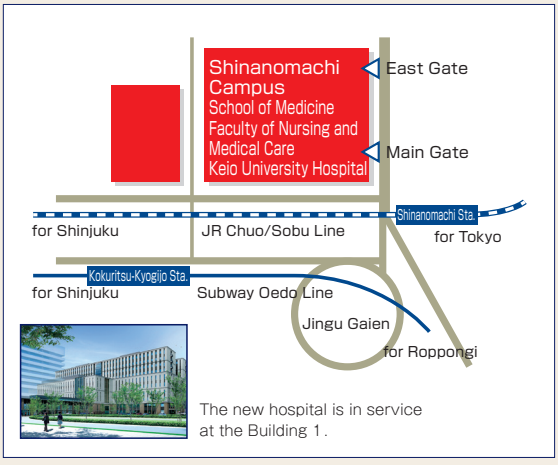
PhD	Registration Fee	Tuition Fee	Total First-Year Fees
	JPY 60,000	JPY 1,110,000	JPY 1,172,600

Maps and Contact Information

Shinanomachi Campus 35 Shinanomachi, Shinjuku-ku, Tokyo 160-8582

【TEL】 Office of Student Services
(Admissions): 03-5363-3662 (Scholarships): 03-5363-3665
【MAIL】 Inquiries: medgrad@info.keio.ac.jp

【TRAIN】 JR Chuo/Sobu Line (1 minute walk from Shinanomachi Station)



The new hospital is in service at the Building 1.